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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,956	09/09/2003	Caifang Yin	IP-024376	3049

1726 7590 12/08/2004

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EXAMINER	
ALVO, MARC S	

ART UNIT	PAPER NUMBER
1731	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/657,956	YIN
	Examiner	Art Unit
	Steve Alvo	1731

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9-03
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10, 13-15, 17 and 18 rejected under 35 U.S.C. 102(b) as being anticipated by UCHIDA et al.

UCHIDA et al teaches cooking wood chips to produce wood pulp and treating the unbleached digested pulp to washing, oxygen delignification (column 7, lines 53-58) followed by a multi-stage ECF (elemental chlorine free) bleaching process (column 8, line 28-column 9, line26), wherein the first chlorine dioxide stage is at a consistency of preferably 10%-25% (column 5, lines 45-49) and a time of 5 to 180 minutes (column 6, line 46); see Example 3 for a O_2-A-D-E-D/O bleaching sequence wherein the first chlorine dioxide stage is at a consistency of 10% and for a time of 60 minutes (column 13, lines 13-17). These are the same steps taught by Applicant. UCHIDA et al column 9, lines 42-48, teaches that when nitrogen gas is used, chlorine dioxide bleaching is hindered in the first chlorine dioxide stage. Thus delignification rather than bleaching would occur. See column 9, lines 18-20 for an extraction stage enhanced with oxygen or peroxide. The first $D_{(pressure)}$-stage of UCHIDA et al replaces conventional first chlorine

dioxide stages in multi-stage bleaching processes. UCHIDA et al column 9, lines 42-48, wherein it is taught that when nitrogen gas is used, chlorine dioxide bleaching is hindered in the first chlorine dioxide stage.

Claims 21 and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over HENRICSON (6,306,253).

HENRICSON teaches treating pulp at a pH of 2 to 5 and a temperature of 75 to 130 ^{O}C (167-266 ^{O}F) for a preferred time of 50 to 150 minutes (column 2, line 26) prior to chlorine dioxide bleaching to remove preferably 50% of the hexenuronic acids from the pulp to obtain a significant savings in chlorine dioxide bleach chemical in the subsequent chlorine dioxides bleach stage (see paragraph bridging columns 1 and 2; column 2, lines 28-30; and Figure 5). If necessary, it would have been obvious to optimize the acid treatment conditions of HENRICSON to increase the removal of the hexenuronic acids.

Claims 1-10 and 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over UCHIDA et al (6,235,153) with or without the ADMITTED PRIOR ART (specification, paragraph [0007], page 2, lines 12-15).

UCHIDA et al teaches cooking wood chips to produce wood pulp and treating the unbleached digested pulp to washing, oxygen delignification (column 7, lines 53-58) followed by a multi-stage ECF (elemental chlorine free) bleaching process (column 8, line 28-column 9, line26), wherein the first chlorine dioxide stage is at a consistency of preferably 10%-25% (column 5, lines 45-49) and a time of 5 to 180 minutes (column 6, line 46); see Example 3 for a O_2-A-D-E-D/O bleaching sequence wherein the first chlorine dioxide stage is at a consistency of 10% and for a time of 60 minutes (column 13, lines 13-17). These are the same steps taught by

Applicant. The $D_{(pressure)}$-stage of UCHIDA et al replaces conventional chlorine dioxide stages in multi-stage bleaching processes. Obviously the first chlorine dioxide stage would remove lignin in the same manner as the instant process as the instant process treats the same material under the same chlorine dioxide conditions. If this is not obvious, then the ADMITTED PRIOR ART teaches that in a typical ECF bleach plant the first chlorine dioxide stage is for delignification and the following stages for bleaching. It would have been obvious to the routineer from the teachings of the ADMITTED PRIOR ART (specification, paragraph [0007], page 2, lines 12-15), that the first chlorine dioxide bleach stage of UCHIDA et al would delignify the pulp as it would be a delignification stage. UCHIDA et al column 9, lines 42-48, teaches that when nitrogen gas is used, chlorine dioxide bleaching is hindered in the first chlorine dioxide stage. Thus delignification rather than bleaching would occur. See column 9, lines 18-20 for an extraction stage enhanced with oxygen or peroxide. See Uchida et al, column 4, lines 54-56 for treating hardwood or softwood; see column 9, lines 3-7 for following the initial chlorine dioxide stage with other chlorine dioxide and extraction stages. Claim 16, 19 and 20 are rejected as UCHIDA et al teaches using one or more of the high pressure chlorine dioxide bleach stages (column 8, lines 27-30). Obviously these could replace any of the stages in a conventional multi-stage bleaching sequence, e.g. the conventional DEDED sequence. It would have been obvious to the artisan that UCHIDA et al could use more than two chlorine dioxide stages, as such is conventional as evidenced by column 3, lines 44-45.

Claims 11, 12, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over UCHIDA et al (6,235,153) with or without the ADMITTED PRIOR ART (specification,

paragraph [0007], page 2, lines 12-15) as applied to claim 1 above, and further in view of HENRICSON (6,306,253).

HENRICSON teaches treating pulp at a pH of 2 to 5 and a temperature of 75 to 130 ^{O}C (167-266 ^{O}F) for a preferred time of 50 to 150 minutes (column 2, line 26) prior to chlorine dioxide bleaching to remove preferably 50% of the hexenuronic acids from the pulp to obtain a significant savings in chlorine dioxide bleach chemical in the subsequent chlorine dioxides bleach stage (see paragraph bridging columns 1 and 2; column 2, lines 28-30; and Figure 5). It would have been obvious to use the conditions taught by HENRICSON in the acid stage of UCHIDA et al (UCHIDA et al, column 6, lines 24-27) to remove at least 50% of the hexenuronic acid to save chlorine dioxide bleaching agent as taught by HENRICSON.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steve Alvo whose telephone number is 571-272-1185. The examiner can normally be reached on 5:45 AM - 2:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steve Alvo
Primary Examiner
Art Unit 1731

msa